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ABSTRACT

This unit is designed to familiarize students in grades 3-6 with wheat production; teach them the nutritional value of wheat products and their role in a well-balanced diet; and give then an easy, hands-on experience in bread making with a nominal amount of cleanup for teachers. The kit suggests that in the first week, teachers discuss wheat production and its value to the state and local economies, examining how wheat farming has changed over the years. In the second week, teachers should discuss wheat flour's nutritional value and the importance of wheat products in a balanced diet. In the third week, they should discuss the importance of safety and sanitation in cooking experiences and conduct the Bread in a Bag activity. The kit presents a Bread in a Bag Checklist designed to help in preparing for the unit, and it offers the Bread in a Bag recipe and procedure. It also includes a nutritional value study sheet, a safety and sanitation in cooking experiments study sheet, a teacher answer sheet to study guides, and a classroom extension activity sheet. The kit provides a set of transparency masters. (Contains 191 references.) (SM)

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ED 439 120

CHILD NUTRITION
A Partner in Education

BREAD IN A BAG

Teacher's Packet

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MAKING BREAD IN A BAG

A Classroom Learning Experience for Grades 3-6

This unit has been designed for a threefold purpose:

1. To familiarize students with wheat production.

2. To teach students the nutritional value of wheat products and their role in a well-balanced diet.

3. To give students an easy, hands-on experience in bread making with a nominal amount of cleanup for teachers.

As you conduct this unit with your students, it is suggested that you follow the outline below. It will ensure that this will be both a learning and fun experience for your students.

WEEK 1: Discuss wheat production and its value to the state and local economies. Discuss how wheat farming has changed over the years.

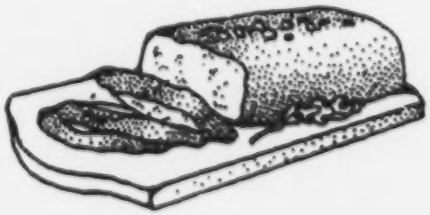
References: **Wheat: The Whole Story**
Local wheat farmers

WEEK 2: Discuss wheat flour's nutritional value and the importance of wheat products in a balanced diet.

References: ***Bread in a Bag*—**Nutritional Value Study Sheet
Dietary Guidelines for Americans and/or **Food Guide Pyramid**
Local registered dietitians

WEEK 3: Discuss the importance of safety and sanitation in cooking experiences. Conduct ***Bread in a Bag*** with classroom.*

References: ***Bread in a Bag*—**Safety and Sanitation in Cooking Experiments Study Sheet



*See Checklist for specific preparation instructions.

BREAD IN A BAG CHECKLIST

3-4 Weeks Prior to Experiment:

- Review procedures involved in making ***Bread in a Bag,*** and/or attend training workshop, if available.

- Set a date for making ***Bread in a Bag*** with your classroom. This should be at least three weeks away to give you adequate time to prepare.

- Contact parents available during the day to help with the project. One or two parents for every ten students should be sufficient.

- Check with food service personnel to see which ingredients (if any) are available from them. The amount of ingredients you need will vary depending upon the size of your group. However, below is a guide to help you order ingredients based upon 20 kits. Each kit makes ***TWO*** loaves of bread, so it would be enough for 40 participants.

INGREDIENTS	AMOUNT NEEDED FOR 20 KITS
Whole-wheat flour	10 pounds
All-purpose flour	7 pounds
Yeast, active dry	1 cup
Salt	½ cup
Honey	2 cups
Salad oil	1 cup

- The following equipment is needed for the experiment. The items marked with an asterisk are available from the State Department of Education (SDE) Child Nutrition Programs (CNP) Section.

  Amount Kit—one kit for every two participants (makes two loaves)

  1 2-gallon, heavy-duty plastic bags (one per kit)*
  3 small plastic bags (sandwich-size)*
  2 1-oz plastic soufflé cups*
  1 5-oz plastic cup with lines marked for ½ cup and ⅓ cup
  2 1-lb size aluminum loaf pans*
  1 dough scraper (they will be used only briefly, so you can get by with fewer of them)
  masking tape
  magic markers
  white paper (for covering tables)
  2-4 pitchers (for water the day of experiment)

- Determine where the experiment will be conducted (classroom or cafeteria).

1-2 Weeks Prior to Experiment:

- Premeasure dry ingredients into appropriate bags as noted in the ***Bread in a Bag*** recipe for groups.
- Mark (if necessary) on plastic cups a ½- and ⅓-cup measure for water.
- Send reminder to parents who have agreed to help. They should arrive about one hour before the experiment begins.

1 Day Prior to Experiment:

- Measure honey and honey/oil into plastic souffle cups; cover with clear wrap to avoid spills.
- Put names on pans with masking tape.
- Remind students to wear hair pulled back (if long) and to bring an apron (if desired).

Day of Experiment:

- Have parents clean table or desk tops with hot, soapy water, then tape white paper down. If you are doing this in the classroom, each group of partners will need only one desk.
- Have parents place one 2-gallon bag, the three ingredient bags, the cup with honey (only), one scraper, and the empty measuring cup (for water) for every set of partners.
- Have parents grease loaf pans and place in single file on sheet pans.
- Immediately after students have washed hands and are seated at their places, have parents pour ⅓ cup warm water (110°F) into measuring cups.
- You are ready to begin ***Bread in a Bag***!

Immediately After Experiment:

- Collect scrapers for cleaning. Roll up white paper from tables, being careful to keep excess flour and bags from dropping to the floor. This should all be thrown away, including any opened ingredient bags.
- After cooling baked loaves, place pan and bread into a large plastic bag. This should be tied or sealed. Return them to students.
- Give students a copy of the recipe to take home with their loaves.

Follow-Up:

- Have students comment on their families' reactions to the bread.
- Go over some of the study questions to see if students can recall what they learned in their bread-making unit.

BREAD IN A BAG*
Recipe

If you do this with a group, it is helpful to have dry ingredients premeasured and in three separate, small plastic bags.

Mini-Bag 1:	⅓ cup all-purpose flour 2 teaspoons yeast (for Step 1)
Mini-Bag 2:	1¼ cups whole-wheat flour 1 teaspoon salt (for Step 5)
Mini-Bag 3:	1 cup all-purpose flour

By using small plastic cups, you can also premeasure liquid ingredients by placing 2 teaspoons honey in 1 small cup (Step 1) and 2 teaspoons honey plus 2 teaspoons oil in another cup (Step 5).

By using 6-ounce plastic glasses, you can mark with a magic marker both ½-cup and ⅓-cup measures for the warm water. This eliminates the need for expensive measuring cups.

REMINDER: Keep mixture in bottom of bag. When it starts creeping up the sides, slide it back down.

PROCEDURE	INGREDIENTS
1. In heavy-duty, 2-gallon plastic bag, with sides rolled down to form bowl, add:	⅓ cup all-purpose flour 2 teaspoons yeast (Mini-Bag 1) + ⅓ cup warm water 2 teaspoons honey
2. Unroll bag, hold tightly at base, and mix on outside of bag with fingertips (not nails).	
3. With bag sides together, roll down as in log roll and let mixture rest (about 10 minutes). Note: Bubbles forming inside bag are a sign that the yeast is growing.	
4. Roll sides into mixing bowl position.	
5. Add:	1¼ cups whole-wheat flour 1 teaspoon salt (Mini-Bag 2) + 2 teaspoons oil 2 teaspoons honey ½ cup warm water

* These directions are for mixing the ingredients in a 2-gallon plastic bag. You can use these same ingredients and amounts for making terrific bread by using traditional bread-mixing procedures.

6. Unroll, squeeze out air; hold tightly toward bottom, and mix gently on outside. Keep mixing until all ingredients are distributed evenly.

7. Form bag into mixing bowl.

8. Add:

Approximately ½ cup all-purpose flour (or half of Mini-Bag 3)

9. Unroll; mix thoroughly until all flour is dispersed.

10. On light-floured surface, roll dough out of bag by rolling sides down, then turning bag inside out.

11. By using a dough scraper, gently work in enough flour to make dough soft but not sticky.

NOTE: Too much flour will make dough stiff, resulting in tough bread.

12. Divide the dough in two equal parts if working with a partner.

13. Knead** dough for approximately ten minutes.

** To knead, use heel of hand and fingertips by folding dough over, pressing with heel, turning, and repeating.

14. Let dough rest by covering for ten minutes.

15. Without stretching dough, flatten dough with palms to form rectangle. On one of the short sides, fold dough over, making point. Press into dough. Starting with point, roll dough tightly to end. Pinch loose ends together to keep dough from unraveling.

16. Turn ends under to match length of greased pan. Make sure top is smooth. Place in pan. Do not press down.

17. Let double in bulk in warm place.

18. Bake at 350°F in a convection oven for 25-30 minutes.

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BREAD IN A BAG

Nutritional Value Study Sheet

Whole-Wheat and White Bread

You may often hear people say "Eat wheat bread—it is better for you." At the same time, we view commercials on television that tell us whole-wheat bread is not any more nutritious than white bread. Who is correct?

Within the context of this study sheet, students will learn:

- The difference between white and whole-wheat bread.
- The definition of dietary fiber and its role in good health.
- The parts of a kernel of wheat and their role in the making of white and whole-wheat flour.
- Consumer tips when shopping for whole-wheat bread.

Whole-Wheat vs White Bread Facts

1. Enriched white bread has approximately the same nutrients as whole-wheat bread. Both are excellent sources of carbohydrates, fiber, protein, B-vitamins, and important trace minerals.

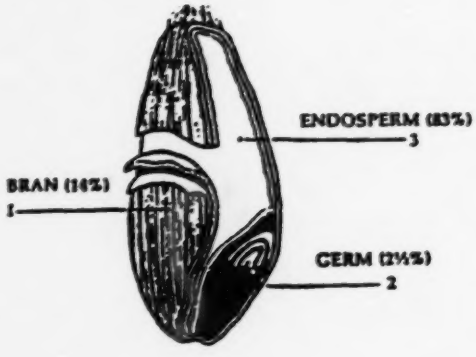
2. While both whole-wheat and white flour products contain fiber, white bread contains 1.6 percent dietary fiber while whole-wheat bread contains 5.3 percent dietary fiber. Scientists tell us that an adequate amount of fiber in our diet may help prevent certain kinds of cancer. Fiber is found in mainly whole-grain breads and cereals and in fresh fruits and vegetables. Nutritionists recommend eating four to eight servings of food high in fiber each day.

3. An average slice of whole-wheat bread contains 60 calories, compared with 70 calories for a slice of white bread. When compared with other foods made with flour, bread has relatively few calories.

1 slice angel food cake	135 calories
1 slice devil's food cake	235 calories
1 doughnut	125 calories

4. Both whole-wheat flour and all-purpose (white) flour are made from kernels of wheat. A wheat kernel is divided into three major parts: bran, endosperm, and germ (see diagram). All-purpose flour is made from only ground endosperm. Whole-wheat flour is made by grinding the entire wheat kernel.

The Wheat Kernel



5. When shopping for 100 percent whole-wheat bread, look for a label that has the words *whole-wheat*. Some kinds of bread look brown, but they may not be whole-wheat. Manufacturers sometimes add colorings or use molasses to make white bread look brown. Remember: If it does not say ***WHOLE-wheat***, then it probably is not.

STUDY QUESTIONS

1. Which bread is more nutritious, whole-wheat or white? Why?

2. Is fiber good for our bodies? Why or why not?

3. How can you tell whole-wheat bread from white bread in the grocery?

4. What are the three parts of a kernel of wheat? Which parts are used to make wheat flour? White flour?

5. Wheat products belong in which major food group?

RELATED ACTIVITIES

1. Have students examine whole-wheat flour and all-purpose (white) flour and compare the color, texture, nutritional value, and fiber content. If a wheat mill is available, grind kernels of wheat into whole-wheat flour.

2. Encourage students to collect bread labels or copy off the ingredients of bread labels. Do any of the breads that "look" brown have artificial coloring or molasses, brown sugar, or syrup added to give it a brown appearance?

3. Bring and view a bread that looks brown as compared with one that is 100 percent whole-wheat. Can students tell a difference?

4. Have students go to the grocery store and count how many different kinds of bread there are. How many breads are wrapped in brown plastic wrappers? Of those, how many say *whole-wheat*?

5. Have students explore reasons why it is equally important to eat foods from all the food groups.

BREAD IN A BAG

Safety and Sanitation in Cooking Experiments
Study Sheet

Believe it or not, cooking is a scientific experiment! The kitchen is your laboratory, and the ingredients you use are your chemicals. Your stove, knives, and pans are just some other equipment you will use in your experiment.

Extreme care must be taken when conducting an experiment in your kitchen. ***AN ADULT SHOULD ALWAYS BE PRESENT.*** Although cooking can be a fun learning experience, it is important to keep practical jokes out of the kitchen. There are too many dangerous objects that could result in serious injury. Save playtime for outdoors.

Since we will be conducting our ***Bread in a Bag*** experiment in large groups, we will not be using the kitchen. We will probably use the classroom or cafeteria. However, the same rules still apply even though we will not be in an actual kitchen. Remember: Rules are made to help keep order and protect you. They will also help you to follow directions so that your bread will turn out perfectly.

Rule 1: Hands should be washed with warm, soapy water and dried with a clean paper towel. Once your hands are clean, you should avoid touching any dirty surface (such as walls or floors) or any part of your face, hair, or clothing. If you do make contact with any of these objects, you should wash your hands again. A sure way of keeping hands clean after you have scrubbed up is to hold your hands up in the *surgeon pose*. This will help you remember that your hands are clean.

Rule 2: Avoid coughing or sneezing in your preparation area. If you feel one coming on, turn your head and cover your mouth with your hand. This will keep germs from spreading to the food you are preparing. Of course, you will need to wash your hands again.

Rule 3: Keep your work area clean and neat. Wipe up any spill as it happens, particularly if it is on the floor and could cause someone to fall. Please try to avoid spilling flour on the floor as it can also be slippery and cause a fall.

Rule 4: In order to keep long hair out of your face, pull it back with a headband or in a ponytail. Hair in food is not only unappetizing, but it can spread germs. Once again: Each time you touch your hair, your hands should be washed.

Rule 5: Follow directions. If you want your experiment to turn out successfully, you must follow instructions. You should never work ahead and should always be alert for new instructions. If you are talking, you may miss an important step, so pay attention.

Rule 6: ***NEVER COOK WITHOUT AN ADULT PRESENT.*** This is for your protection.

STUDY QUESTIONS

1. What are germs? What do they do? Where do germs go?

2. What kinds of things could happen if you tried to cook without an adult present?

3. Why is it important to have clean hands when cooking?

4. Why is cooking like a scientific experiment?

RELATED ACTIVITIES

1. Have students practice washing their hands in warm, soapy water and drying them with a clean paper towel. Note how clean their hands feel and look. Have them hold their hands in the *surgeon pose** for a few minutes. Continue daily activities for a few more minutes. Have students observe how clean their hands look and feel.

   * A *surgeon pose* is having elbows and hands directly in front so as to avoid contact with any other objects.

2. Using the ***Bread in a Bag*** recipe, go over each ingredient in the order it appears in the instructions. Emphasize the importance of reading a recipe completely through before beginning and also the importance of following directions. You may want to consult the slide script for additional information on the role of specific ingredients.

HANDWASHING PREVENTS INFECTION!

TEACHER ANSWER SHEET TO STUDY GUIDES

Nutritional Value Study Sheet

STUDY QUESTIONS

1. ***Which bread is more nutritious, whole-wheat or white? Why?*** Both products, whole-wheat and white bread, are basically equal nutritionally, except the whole-wheat product has a higher fiber content.

2. ***Is fiber good for our bodies? Why or why not?*** Fiber is any part of the plant that is not digested as it goes through the digestive process. A high fiber intake has been shown to decrease our chances of getting certain types of cancer. There is no reason, however, to believe that eating large quantities of fibrous foods will be beneficial. Eating a variety of fiber foods (especially fresh fruits and vegetables and whole grains and cereals, as well as nuts and seeds) in moderate amounts is the best advice to follow.

3. ***How can you tell whole-wheat from white bread in the grocery?*** The best way to tell is by reading the label. If it does not read ***WHOLE-wheat***, then it probably is not 100 percent whole-wheat bread.

4. ***What are the three parts of a kernel of wheat? Which parts are used to make wheat flour? White flour?*** The three parts of a kernel of wheat are endosperm, germ, and bran. Whole-wheat flour is made from all three parts, while white flour is made only from the endosperm.

5. ***Wheat products belong in which major food group?*** Grains or Breads/Cereals.

TEACHER ANSWER SHEET TO STUDY GUIDES

Safety and Sanitation Study Sheet

STUDY QUESTIONS

1. ***What are germs? What do they do? Where do germs live?*** Germs are bacteria, microscopic living organisms whose main function is to reproduce. Some germs are useful, while others are dangerous. They can cause infection and make one sick. An example of a good germ is one that helps aid in the digestion of foods. Germs live anywhere, but particularly on unclean surfaces.

2. ***What kinds of things could happen if you tried to cook without an adult present?*** You could fall off the stool trying to reach things. You could burn yourself, break equipment, or cause a fire. (Your students may come up with additional answers based on true experiences.)

3. ***Why is it important to have clean hands when cooking?*** Germs live on hands and everything that hands touch. Some germs are bad and can cause illness.

4. ***Why is cooking like a scientific experiment?*** Scientific experiments usually have directions to follow using specific procedures and chemicals in order to produce a given result. Sometimes the expected result occurs, and sometimes it does not. In cooking, one follows specific instructions (recipe) using required ingredients in the hope that something delicious is created. Sometimes it tastes just as you expected, sometimes it does not.

EXPERIMENT

Effects of Water Temperature on Growth of Yeast

Supplies Needed:

3 glass custard cups or other suitable small containers
thermometer
teaspoon
yeast
water
ice
pan to boil water

Procedure:

1. Place ¼ cup ice water and approximately 1 teaspoon yeast in Cup 1.

2. Place ¼ cup boiling water and approximately 1 teaspoon yeast in Cup 2.

3. Place ¼ cup warm water, between 100° and 115°F, and approximately 1 teaspoon yeast in Cup 3.

4. Allow the yeast/water to stand for 10 minutes.

Conclusion:

1. Describe the appearance of the yeast in ice water.

2. Describe the appearance of the yeast in boiling water.

3. Describe the appearance of the yeast in 100° to 115°F water.

4. How important is the water temperature when softening yeast? Why?

CLASSROOM EXTENSION ACTIVITY SHEET

Most homes have some of the bread and cereal foods. How many of these can you find? Write in the right-hand column whether you ate that food. Circle the ones you ate that were whole-grain foods.

Foods in my home	*I ate this today (Yes or No)*
_____ Bread (What kind?_____)	_____
_____ Oatmeal (Instant____ Quick_____ Old-fashioned_____)	_____
_____ Flour (What kind? Whole-wheat_____ All-purpose_____)	_____
Self-rising_____ Bread_____Other_____)	
_____ Spaghetti, macaroni, or other pasta (What kind? _____)	_____
_____ Noodles	_____
_____ Crackers (What kind?_____)	_____
_____ Hamburger or hot dog buns	_____
_____ Tortillas (Corn or wheat flour?_____)	_____
_____ Noodle soup (What kind?_____)	_____
_____ Popcorn	_____
_____ Waffles (Frozen or mix?_____)	_____
_____ Rice (What kind?_____)	_____
_____ Muffins (What kind?_____)	_____
_____ Cornmeal (White_____ Yellow_____ Muffin Mix_____)	_____
_____ Pizza crust or pizza	_____
_____ Cookies (What kind?_____)	_____
_____ Cake mix (What kind?_____)	_____
_____ Cold cereal (What kind?_____)	_____
_____ Quick barley or barley soup	_____
_____ Oriental noodles	_____
_____ Pretzels	_____
_____ Biscuits (Mix or refrigerator?_____)	_____
_____ Bagels	_____
_____ English muffin	_____
_____ Rye crisp bread or crackers	_____
TOTAL NUMBER OF DIFFERENT FOODS I ATE.	_____
HOW MANY WERE WHOLE-GRAIN?	_____

Classroom Extension Activity: Scavenger Hunt

Grain food products from the base of the Food Guide Pyramid—breads, cereals, rice, and pasta—are found in many sections of your local grocery store. They vary greatly in price per serving. Use your local grocery store, the *Check Your 6* serving size list, or the labels on the food and your math skills to ***fill in the blanks of at least ten of the following foods.*** If the foods are found in several places, list only one.

Product Name	Aisle Number	Brand Name	Package Price	Servings Per Package	Cost Per Serving (Do at home)
1. Loaf of bread					
2. Pita bread					
3. Rice cakes					
4. Rye crisp breads					
5. Flour or corn tortillas					
6. Egg roll/wonton wrappers					
7. Bagels					
8. Spaghetti					
9. Pizza					
10. English muffins					
11. Frozen waffles					
12. Popcorn					
13. Quick barley (pearl)					
14. Refrigerator biscuits					
15. Bulgur					
16. Pancake mix					
17. All-purpose flour					
18. Graham crackers					
19. Animal crackers					
20. Oatmeal (quick-cooking)					
21. Cold cereal					

Teachers: If you wish to coordinate this as a class activity, please contact the manager of your local grocery store to organize it.

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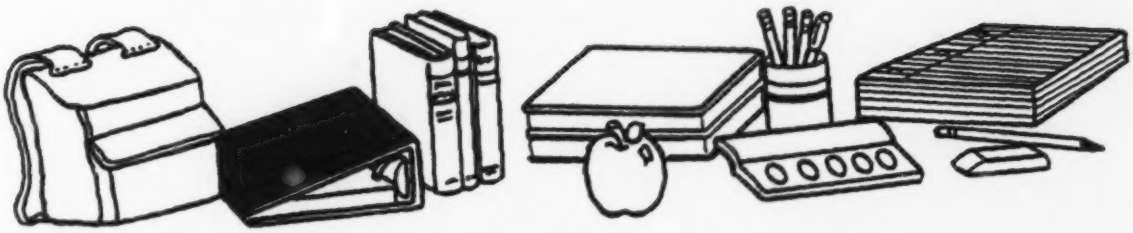
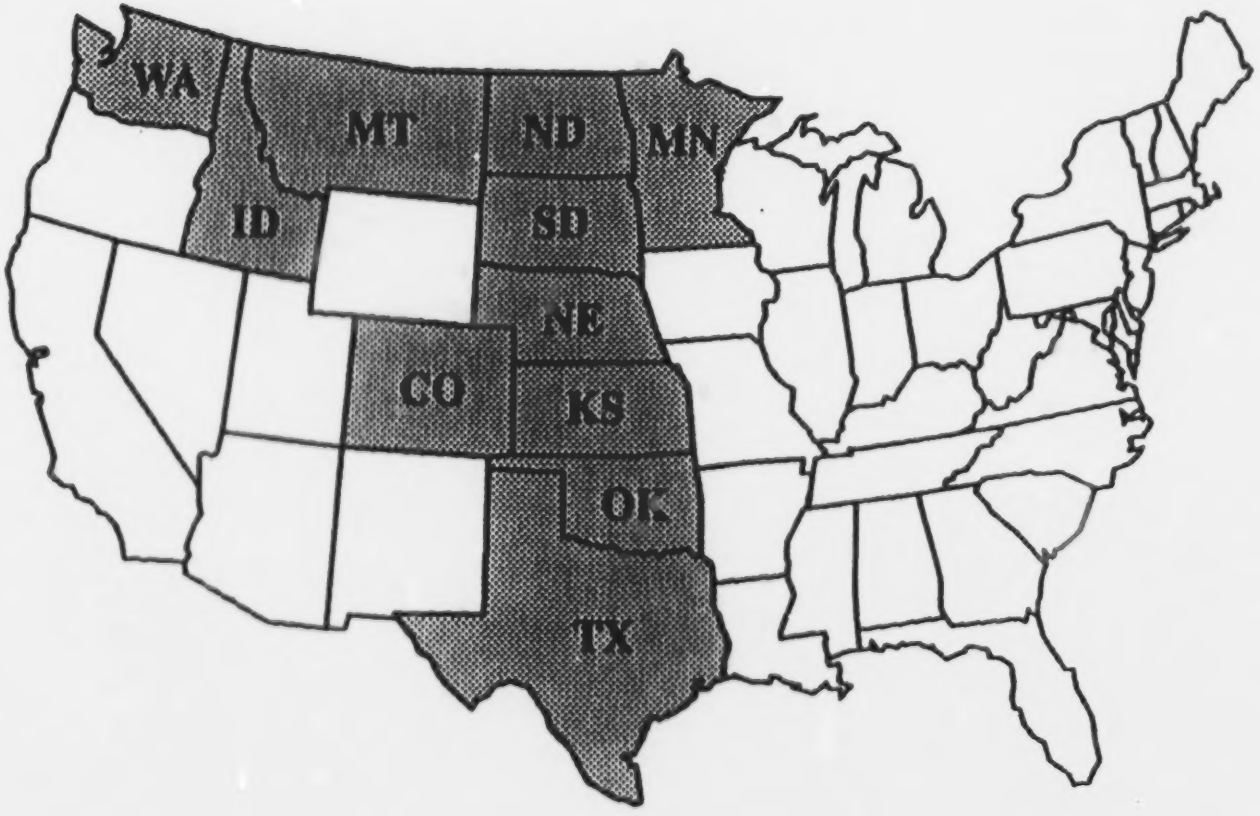


TRANSPARENCY MASTERS

Wheat-Growing States—Top Eleven
42 States Total in the United States



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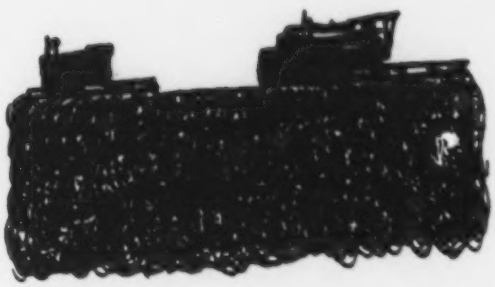
THE LIFE OF THE WHEAT KERNEL

Soil Prepared

Seed Planted

Wheat Growth

Fall: **Germination**
Winter: **Dormant**
Spring: **Maturity**



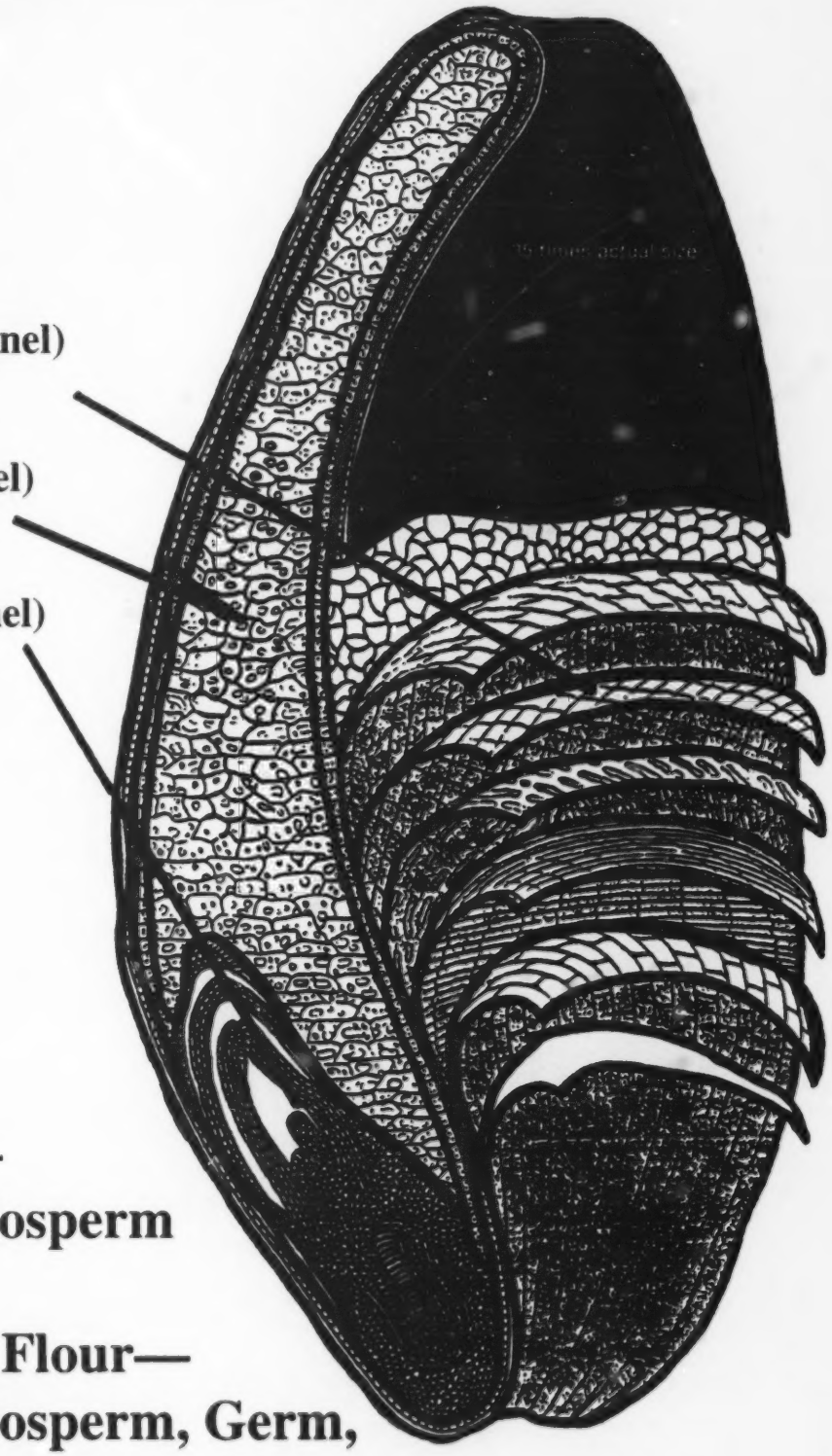
Wheat Harvested

A WHEAT KERNEL ...UP CLOSE!

BRAN LAYERS
(14.5 percent of kernel)

ENDOSPERM
(83 percent of kernel)

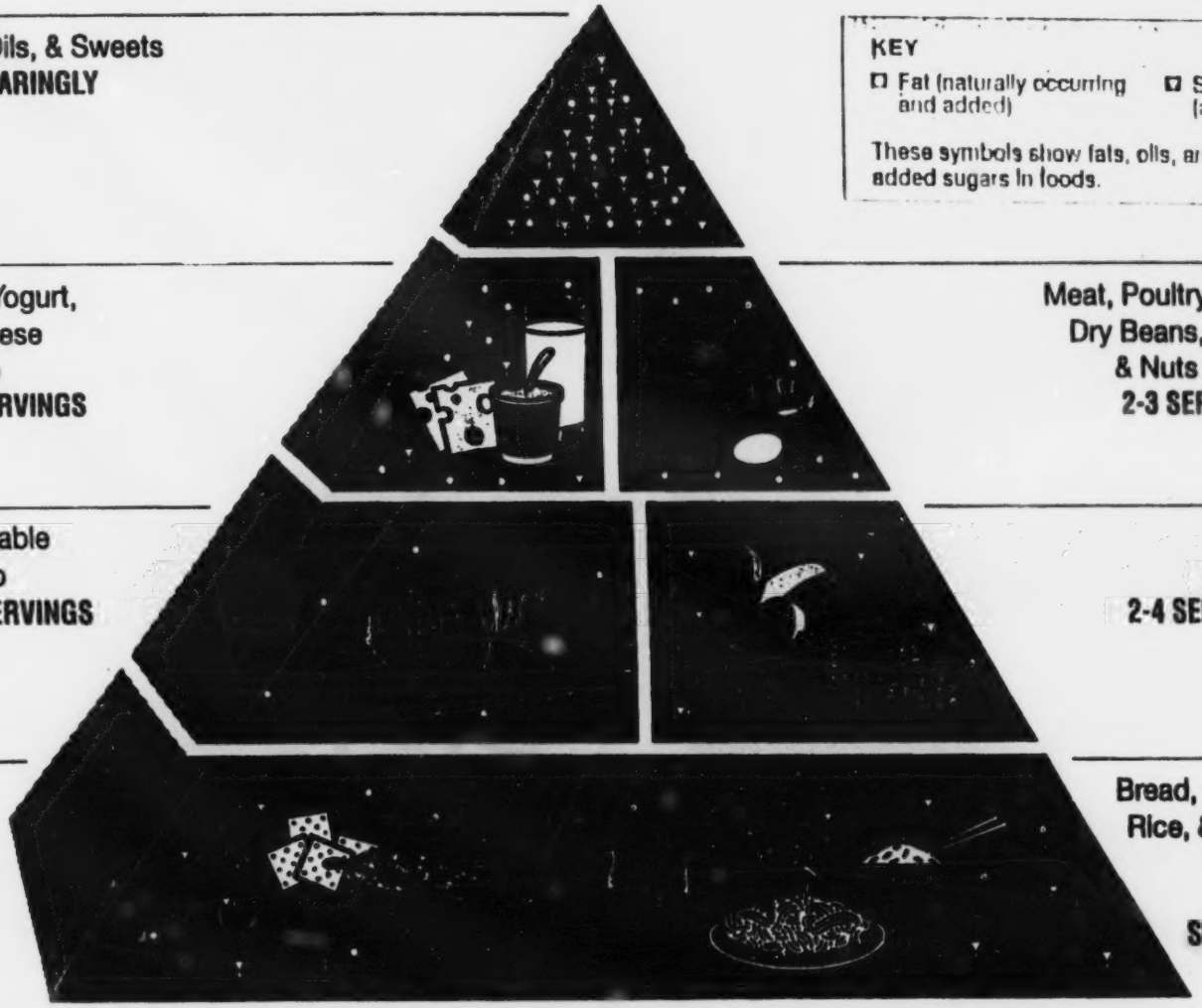
GERM
(2.5 percent of kernel)



White Flour—
Ground Endosperm

Whole-Wheat Flour—
Ground Endosperm, Germ, and Bran

Food Guide Pyramid
A Guide to Daily Food Choices



Oklahoma State Department of Education
May 1999

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